

### ABSTRACT

A system and method for collecting sub-hourly ambient particulate matter samples at flow rates of 170-260 L/min is suitable for either on- or off-line near-real-time multielement analysis by graphite furnace atomic absorption spectrometry and other techniques for which a sample in slurry form is advantageous. Condensational growth of water vapor was used to grow fine particles by steam injection. The grown droplets are concentrated using a virtual impactor, then separated from the airstream using a real impactor. The particles are collected in a liquid slurry which is hydraulically delivered to sample vials every 30 minutes for offline analysis, or directly delivered into the graphite furnace for atomic absorption spectrometry analysis.